

Claims

1. A reaction chamber assembly comprising
e.g. a microscope slide or any other slide or carrier sy-
5 stem and an assembly cover, wherein said assembly cover
comprises at least one port and at least one channel ha-
ving a first end at the port and a second end at a reac-
tion compartment which reaction compartment together with
the microscope slide forms a reaction chamber with prede-
10 termined volume.

2. The reaction chamber assembly of claim 1,
wherein said channels at their second end are formed such
that they end in a recess with a concave inlet.

3. The reaction chamber assembly of the pre-
15 ceding claims, wherein the assembly cover comprises an O-
ring surrounding the reaction compartment and establi-
shing a seal to the microscope slide.

4. The reaction chamber assembly of anyone of
the preceding claims, wherein the assembly cover is made
20 of a material or a combination of materials leading to an
assembly cover with good thermoconductivity, e.g. polyme-
thylmethacrylate.

5. The reaction chamber assembly of anyone of
the preceding claims, wherein the assembly cover is made
25 of a material or a combination of materials leading to an
assembly cover with optimal transparent properties in or-
der to be used within optical detection systems e.g.
fluorescence microscopes or CCD based detection systems.

6. The reaction chamber assembly of anyone of
30 the preceding claims, wherein at least one of the port(s)
is provided with a connecting means, such as a harness
suitable for automated application.

7. The reaction chamber assembly of anyone of
the preceding claims, wherein a heating element and/or
35 temperature measuring element is integrated in the assem-
bly cover.

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8. The reaction chamber assembly of anyone of the preceding claims, wherein at least one of the ports is provided with a removable closing means such as a screw.

5 9. The reaction chamber assembly of anyone of the preceding claims, wherein a sealing means, e.g. an O-ring, is provided close to the port suitable to provide a seal to closing or connecting means.

10 10. The reaction chamber assembly of anyone of the preceding claims, wherein said assembly cover is provided with at least one clamping means for fixing the microscope slide on the assembly cover, such as O-rings.

15 11. The reaction chamber assembly of anyone of the preceding claims, wherein the assembly cover comprises at least two ports and at least two channels ending in the same reaction compartment.

 12. The reaction chamber assembly of anyone of the preceding claims, wherein the assembly cover comprises at least two reaction compartments.

20 13. The reaction chamber assembly of anyone of the preceding claims, wherein the reaction compartment comprises a shelf.

 14. The reaction chamber assembly of claim 13, wherein the shelf is variable.

25 15. The reaction chamber assembly of anyone of the preceding claims, wherein the microscope slide carries biological specimen.

30 16. A modular system comprising at least two reaction chamber assemblies of anyone of the preceding claims, wherein any one of the bioreactors can individually be removed.

 17. The modular system of claim 16, wherein the bioreactors are placed in a housing of fixed or variable dimensions, said housing allowing easy connection and removal of the bioreactors and liquid supply units.

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18. The modular system of claim 16 or 17, wherein said housing provides a temperature adjusting system.

19. An assembly cover comprising at least one
5 port and at least one channel having a first end at the port and a second end at a reaction compartment which reaction compartment together with the microscope slide forms a reaction chamber with predetermined volume.

20. The assembly cover as defined in anyone
10 of claims 2 to 15.

21. A temperature controlling and adjusting cover with an at least in part planar surface that can be brought in contact with the microscope slide or the assembly cover of the bioreactor of anyone of claims 1 to
15 15 in at least the region of the reaction chamber.

22. A temperature controlling and adjusting system comprising at least two temperature controlling and adjusting covers of claim 21.